NUTS-AND-BOLTS LOOK AT 3D PRINTING IN LIBRARIES PART 2: MY LIBRARY'S FUTURE

What is a MakerSpace and Deciding If Your Patrons Would Benefit From a 3D Printer

Presented May 27, 2014 By:
Paula & Paul Waak

Overview

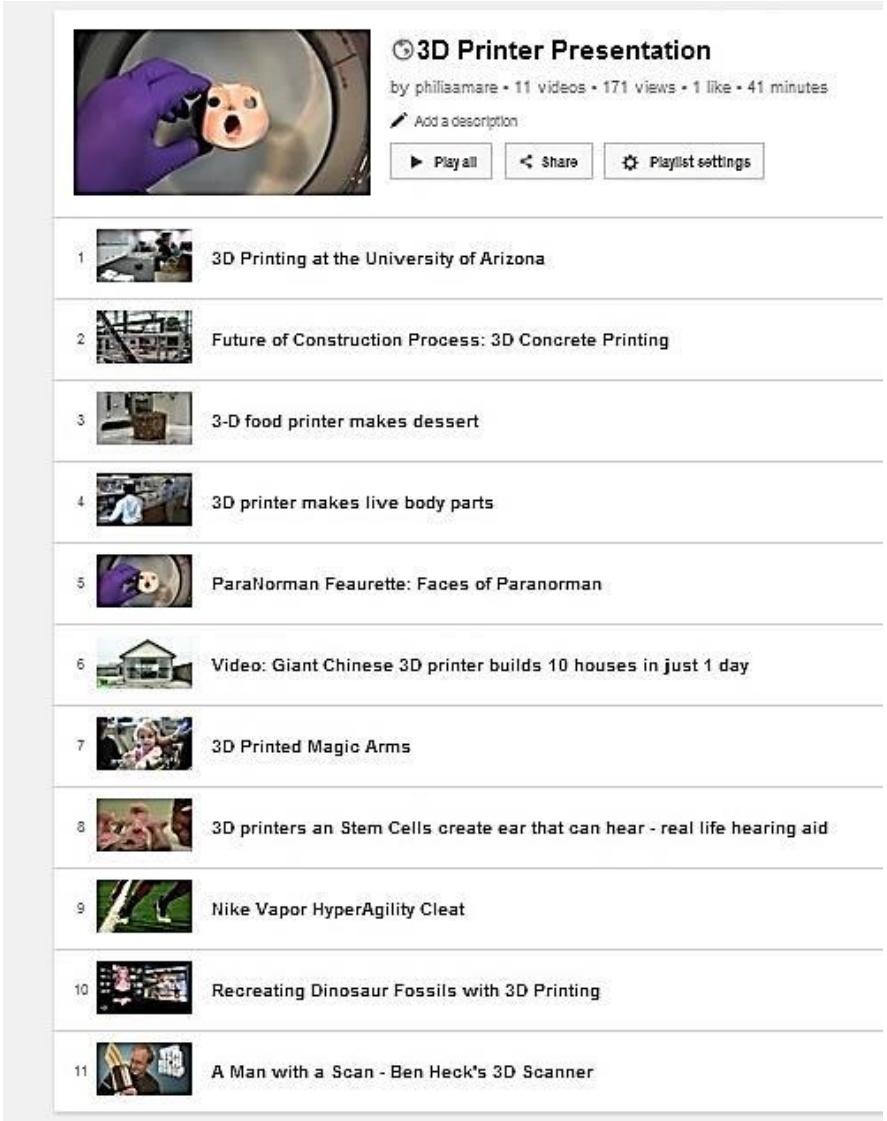
- Recap from Part 1 About 3D Printers
- What Makes MakerSpace
- Public & Academic Library MakerSpaces
- Do All MakerSpaces Have a 3D Printer?

----Questions----

- Selecting the Right 3D Printer(s)
- Funding Options for 3D Printers
- Administrative Side of 3D Printing
- Lessons Learned & Great Experiences

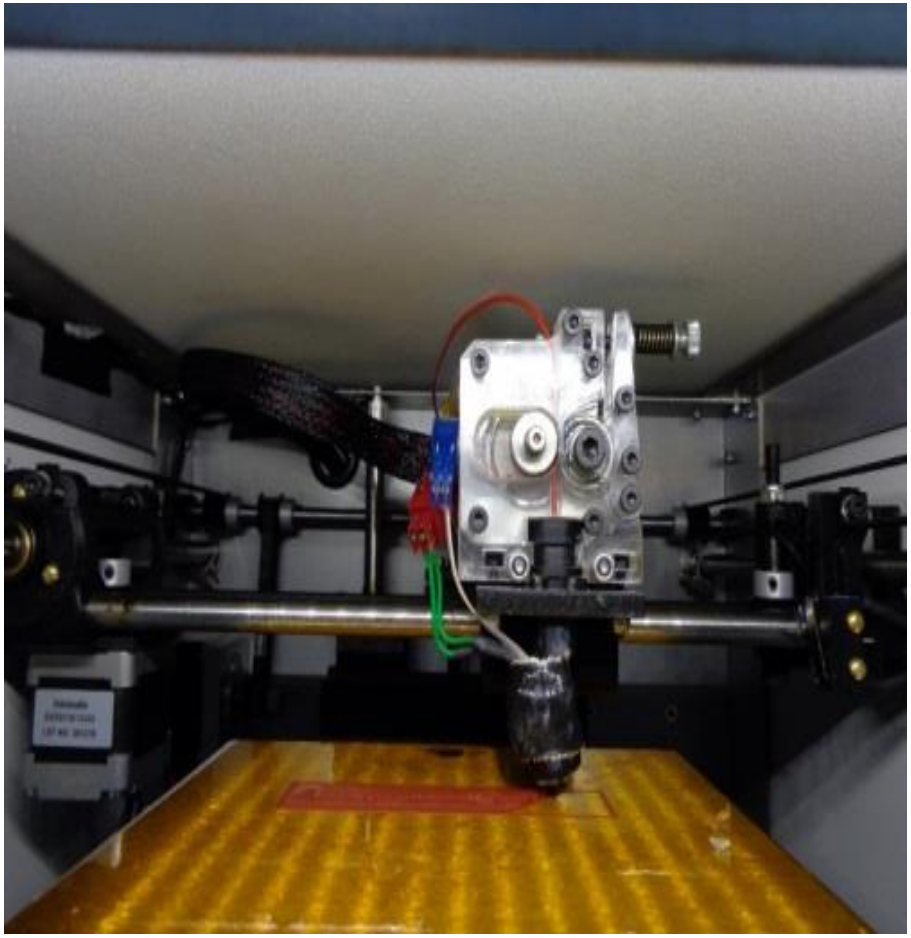
Recap from Part 1 About 3D Printer:

http://www.youtube.com/playlist?list=PLiW3yjMHQYUq6PhUmX1JEYPfNQkDNRp8B

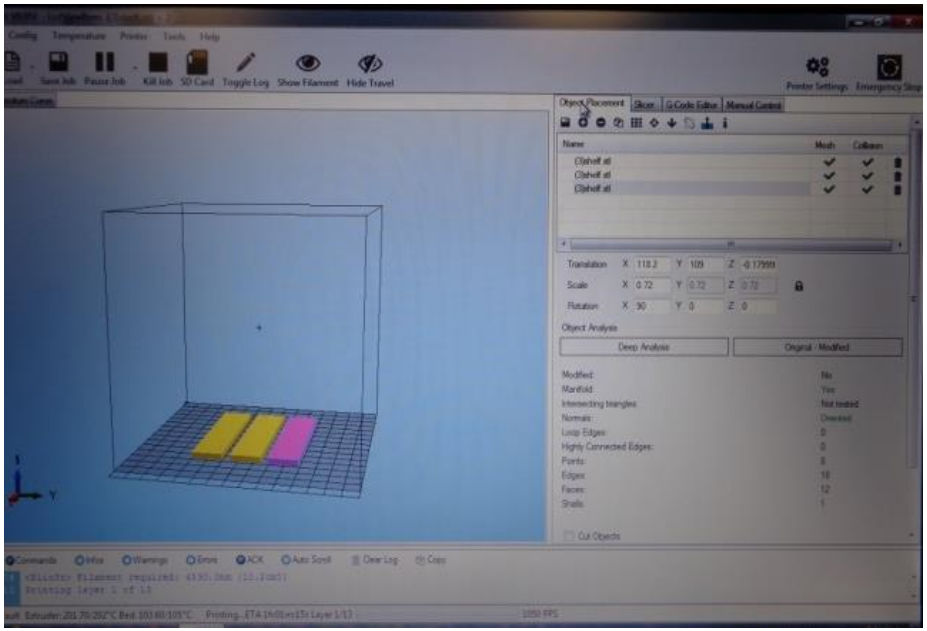


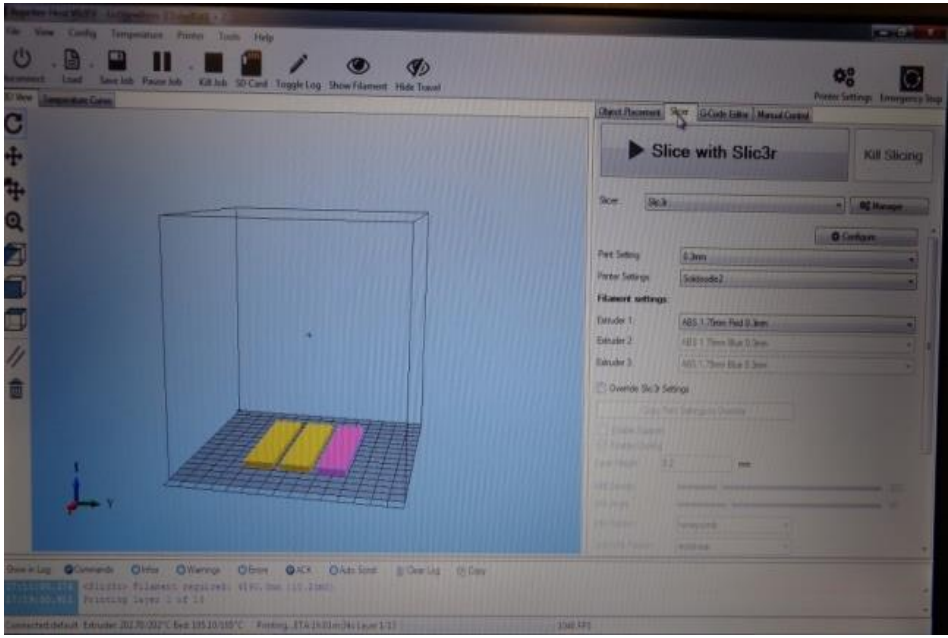
- Around since the 1980s
- Consumer Use in 2005
- Rapid Evolution
  - Affordability
  - Mainstream Media
  - Available to youth and up

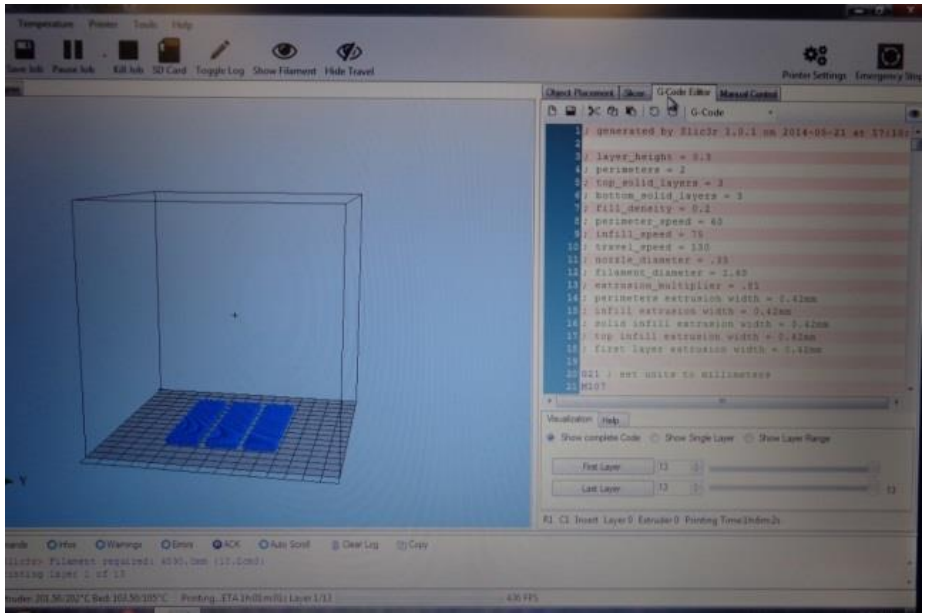
A Common Consumer 3D Printer: Filament, Nozzle, and Platform

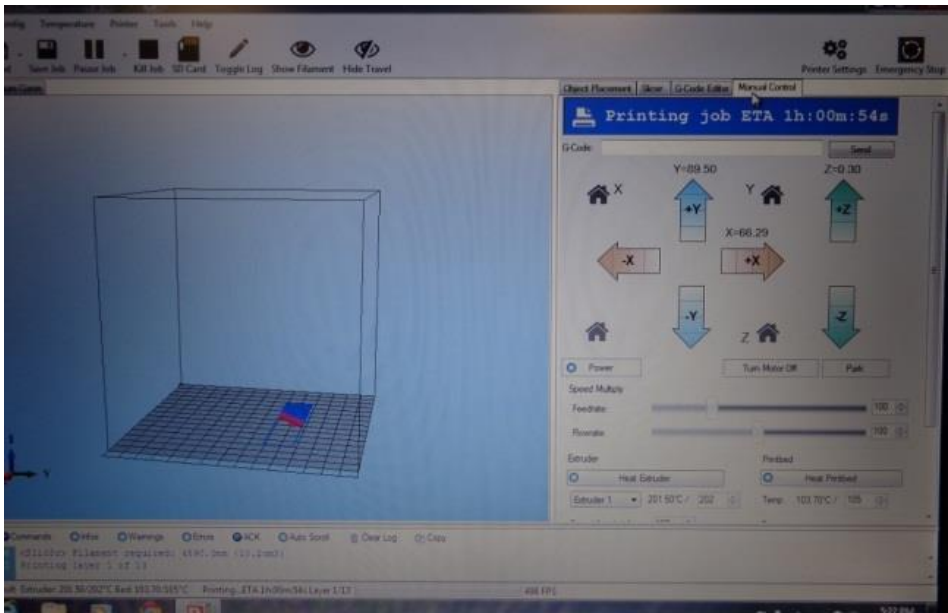


3D Printer Language (i.e.Repetier-Host)

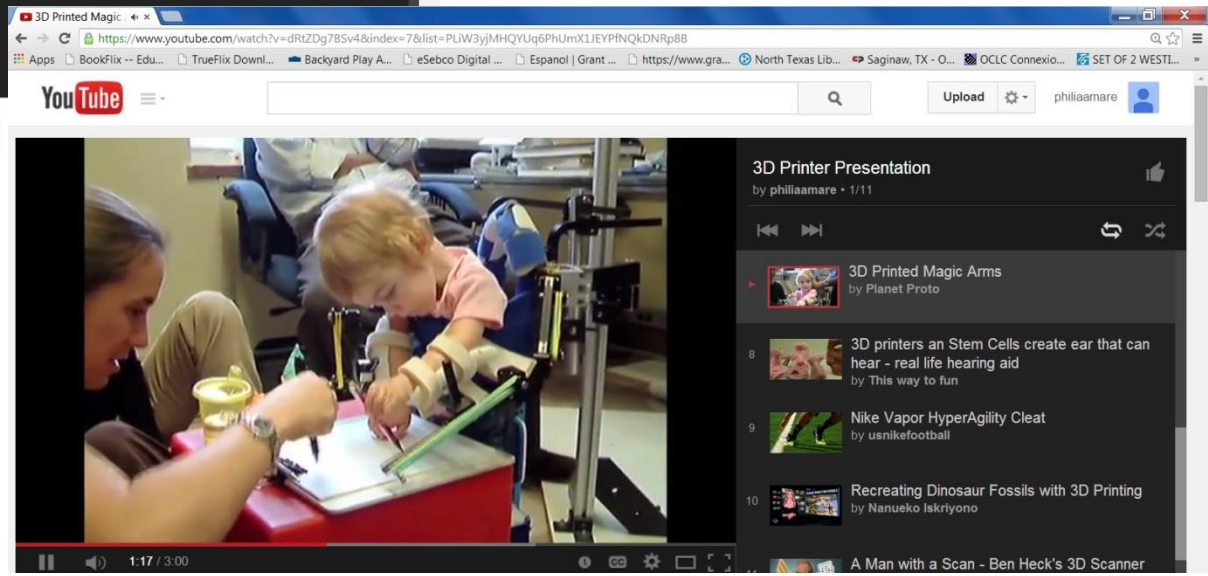




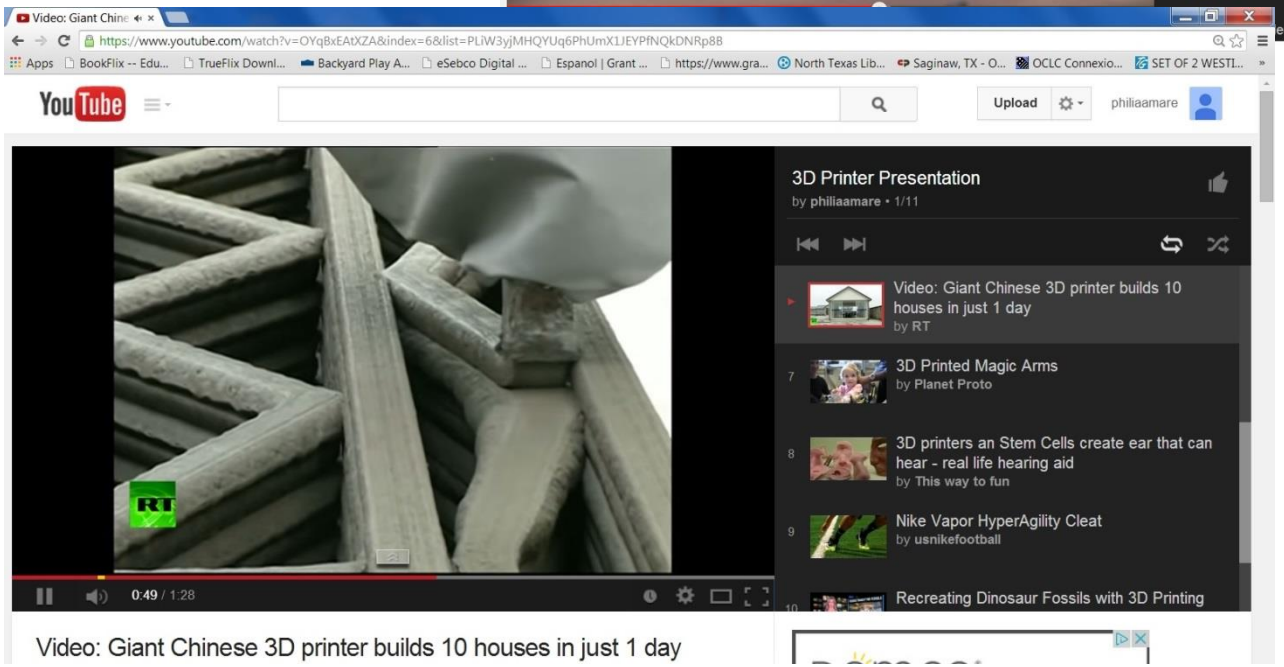




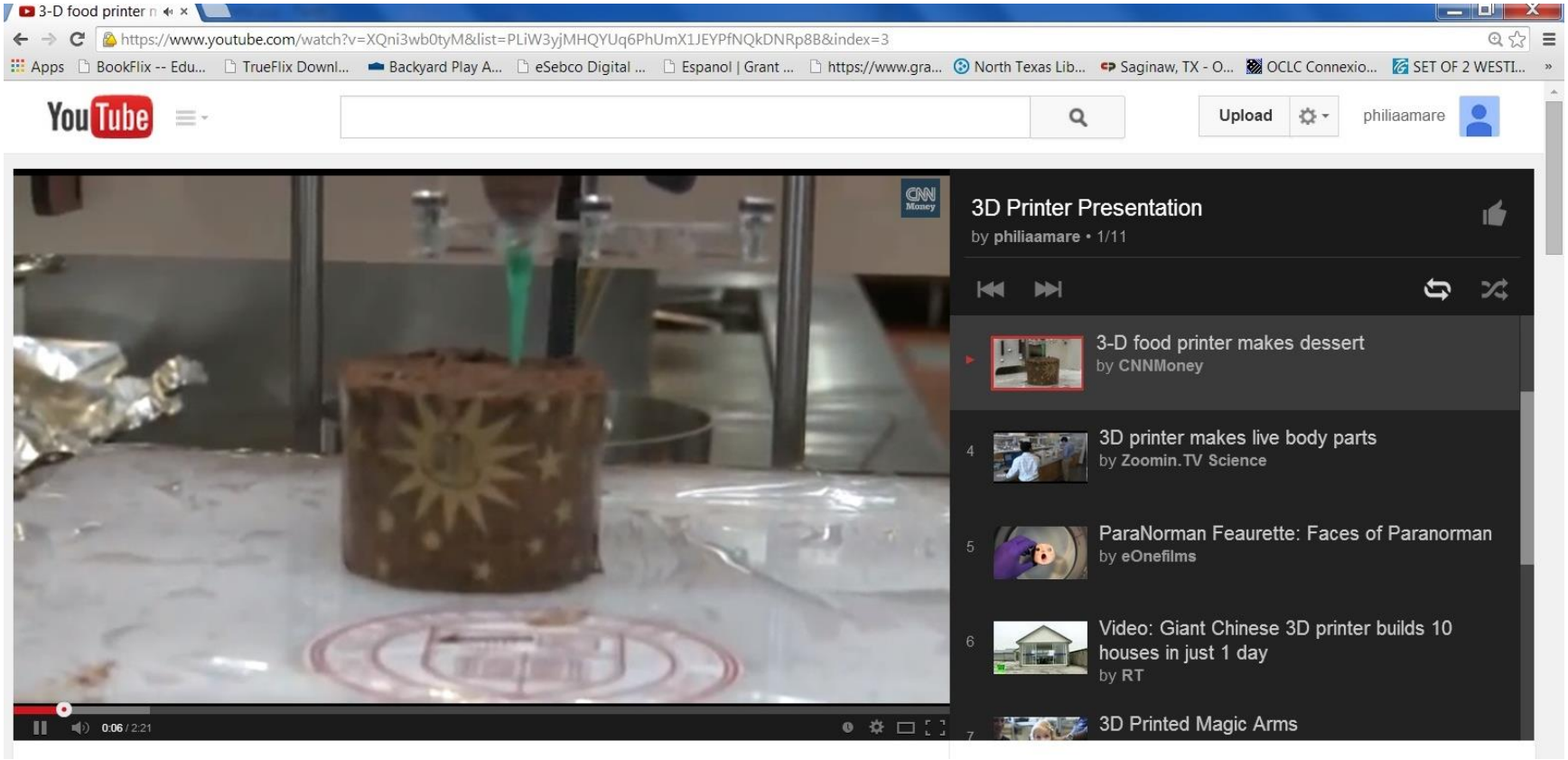
Quick and Affordable Custom Parts



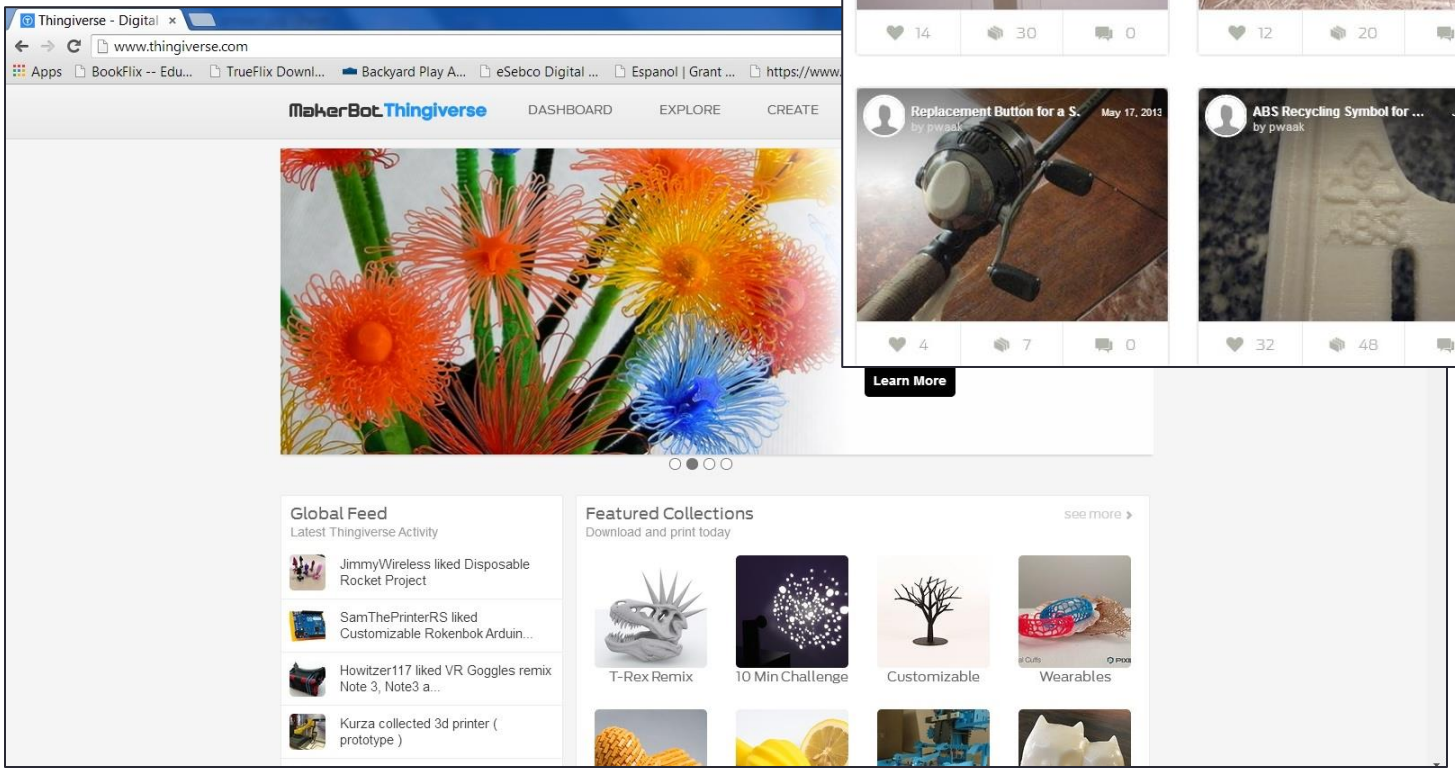
Large Scale Printing with Concrete

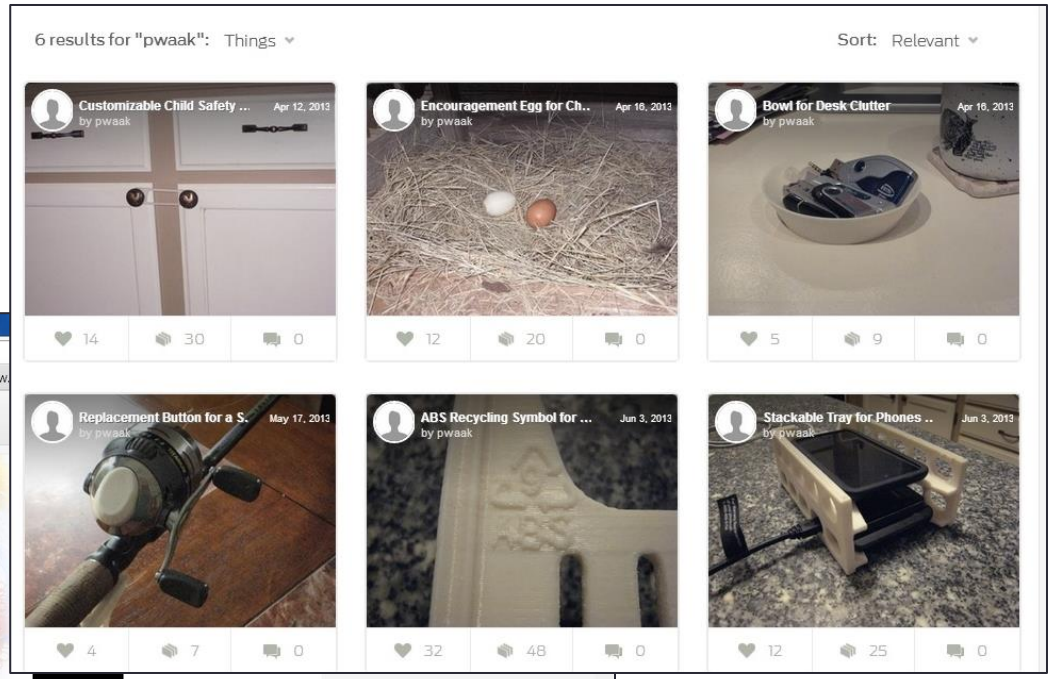


Tasty and Creative

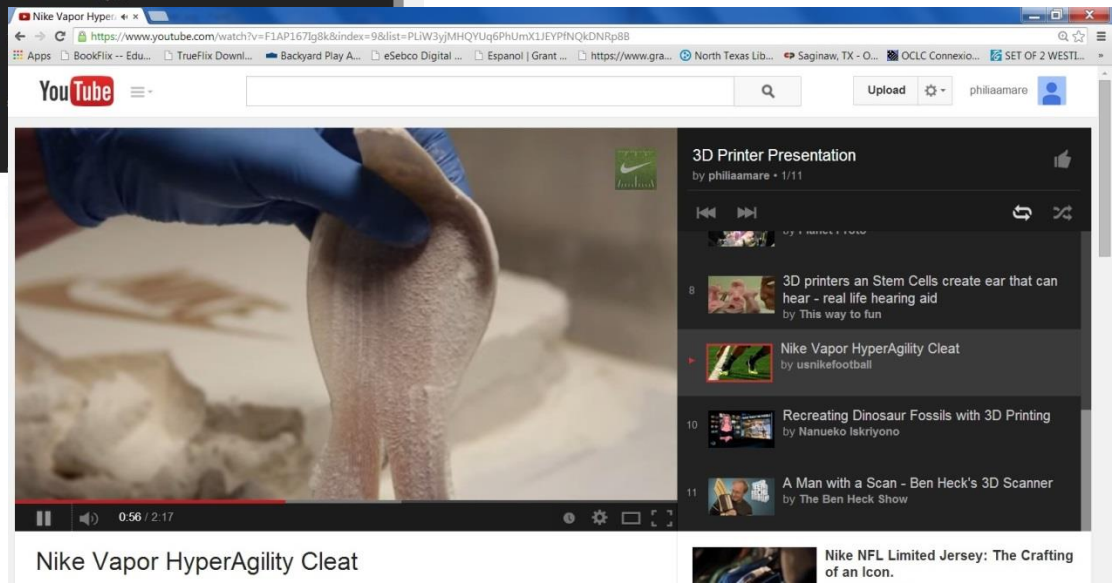


Hobbyists and Fixer-Uppers

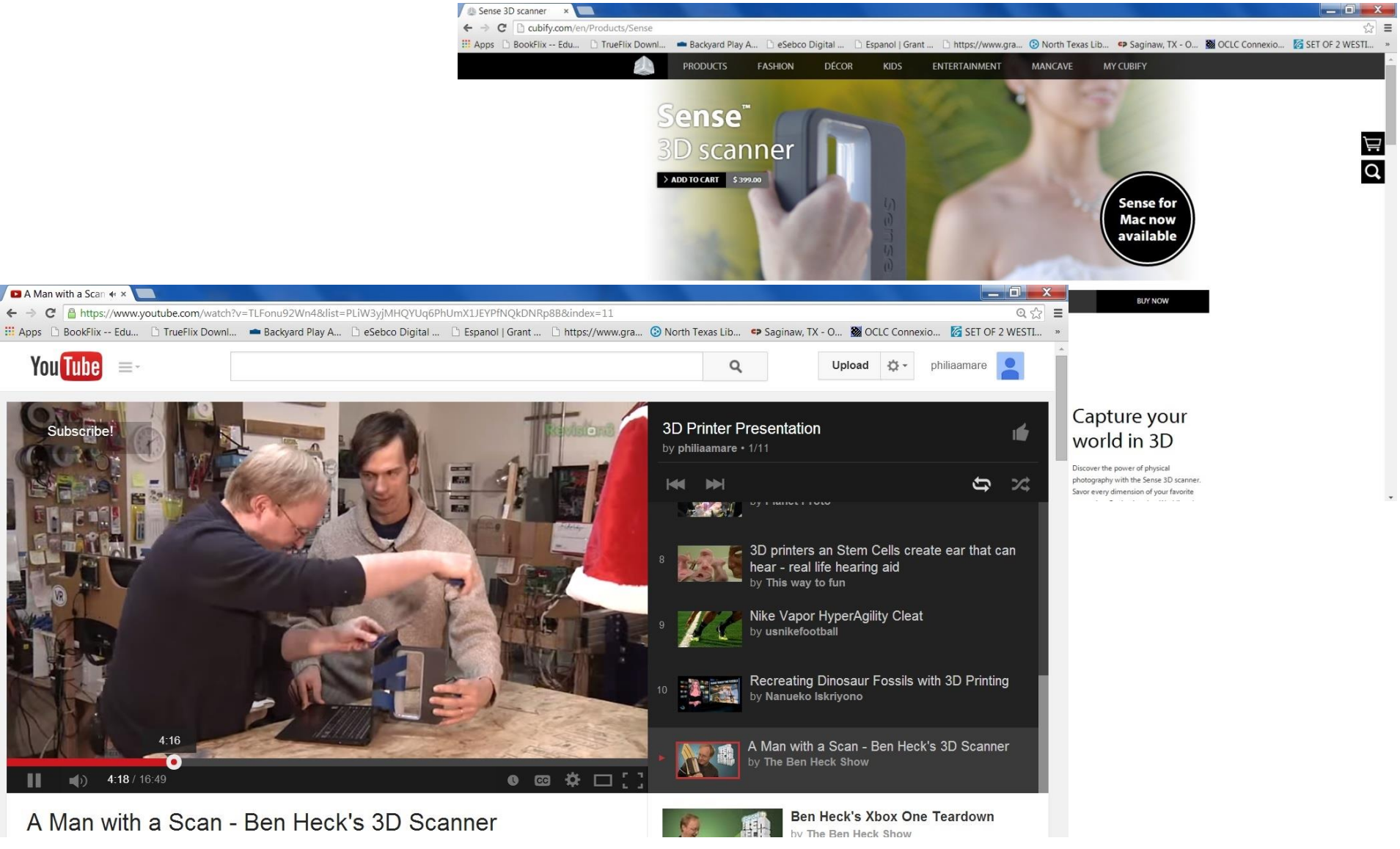




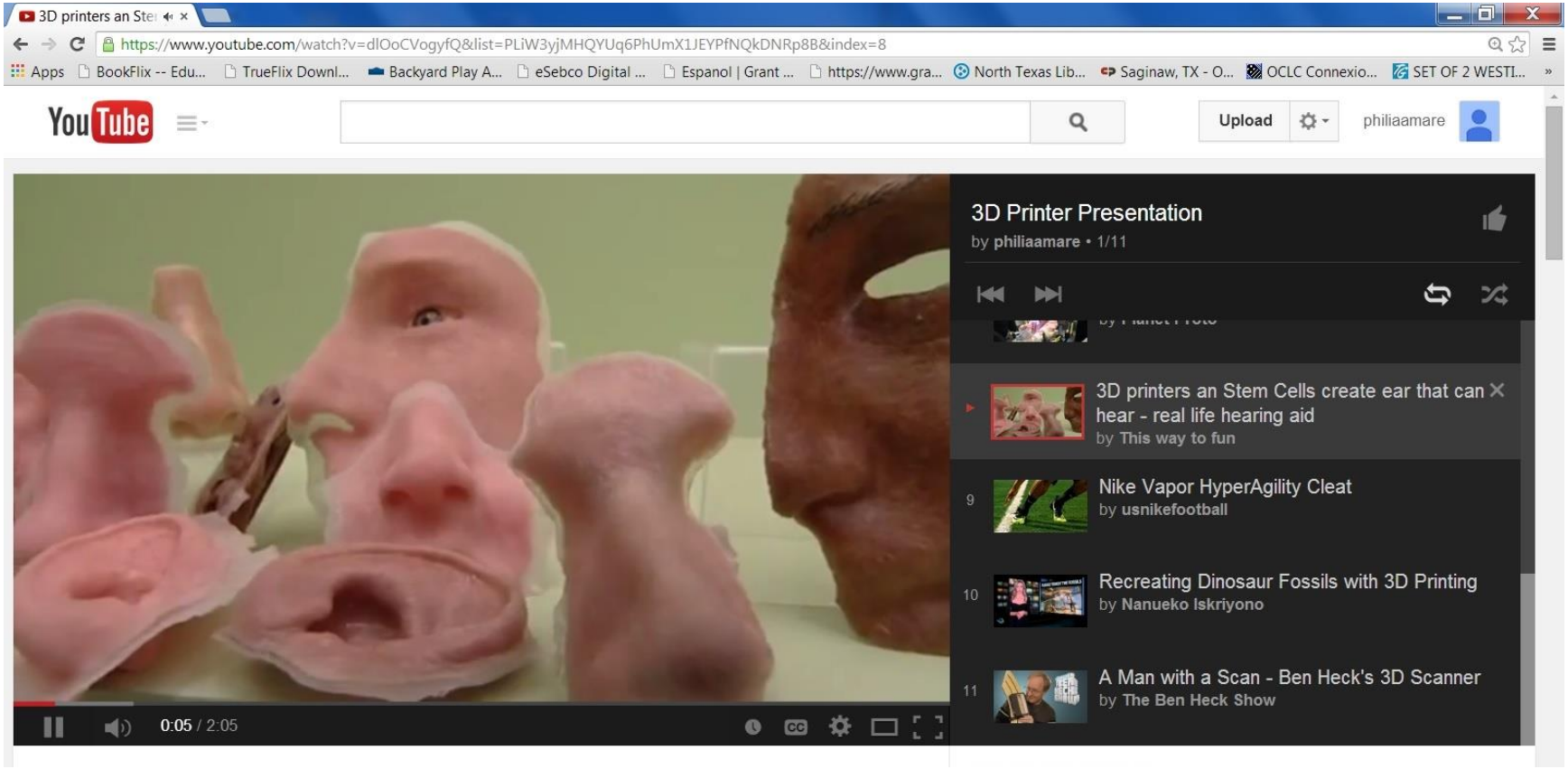
Powder Printing 3D Printers: Into the Arts, Crafts, and Science



Scanning into the Future: http://cubify.com

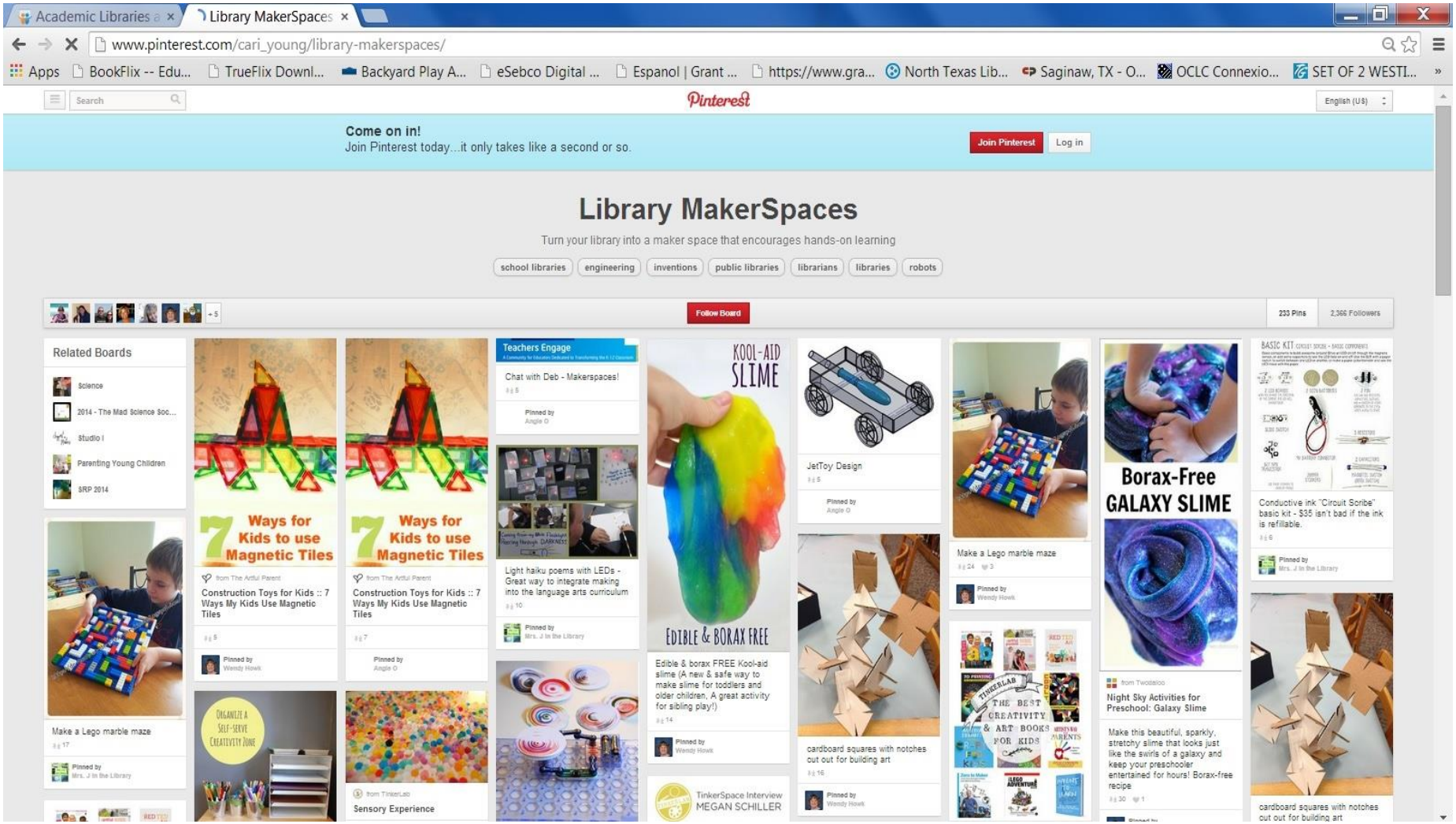


Medical World



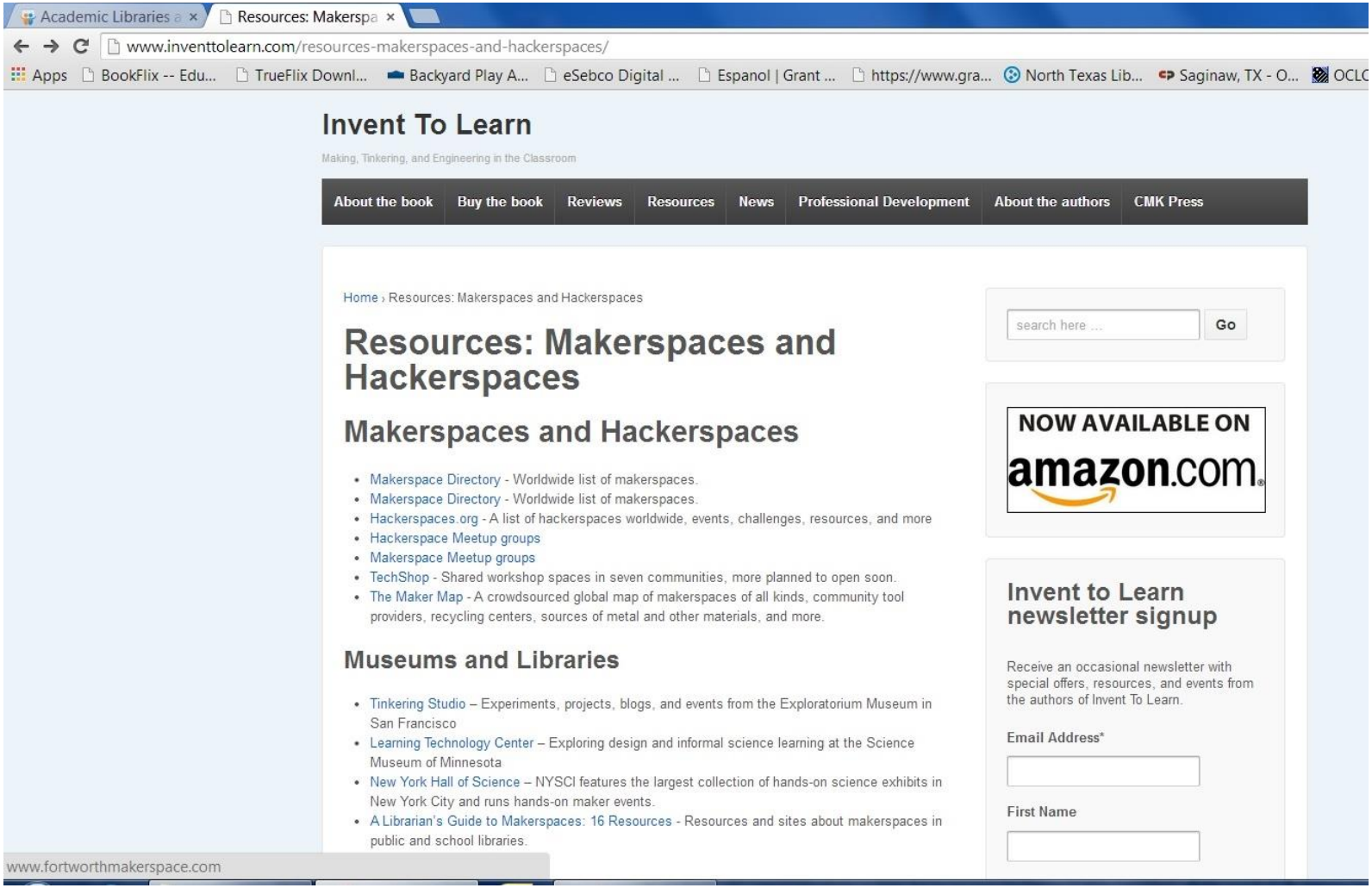
What Makes a MakerSpace:

www.pinterest.com/cari_young/library-makerspaces/

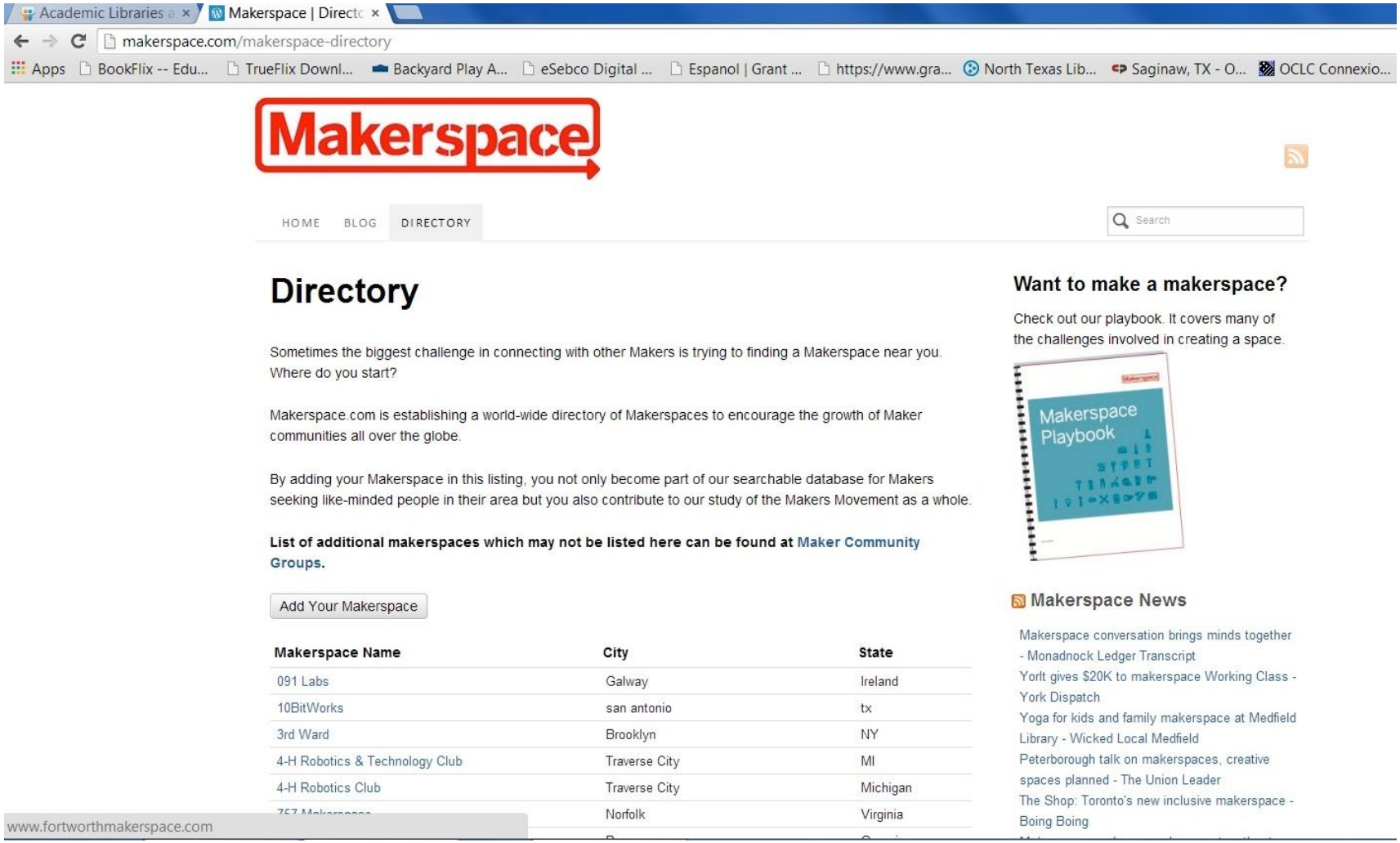


Public & Academic Library MakerSpaces:

www.inventtolearn.com/resources-makerspaces-and-hackerspaces/



Find a MakerSpace Near You: http://makerspace.com/makerspace-directory



MakerSpaces in Libraries:

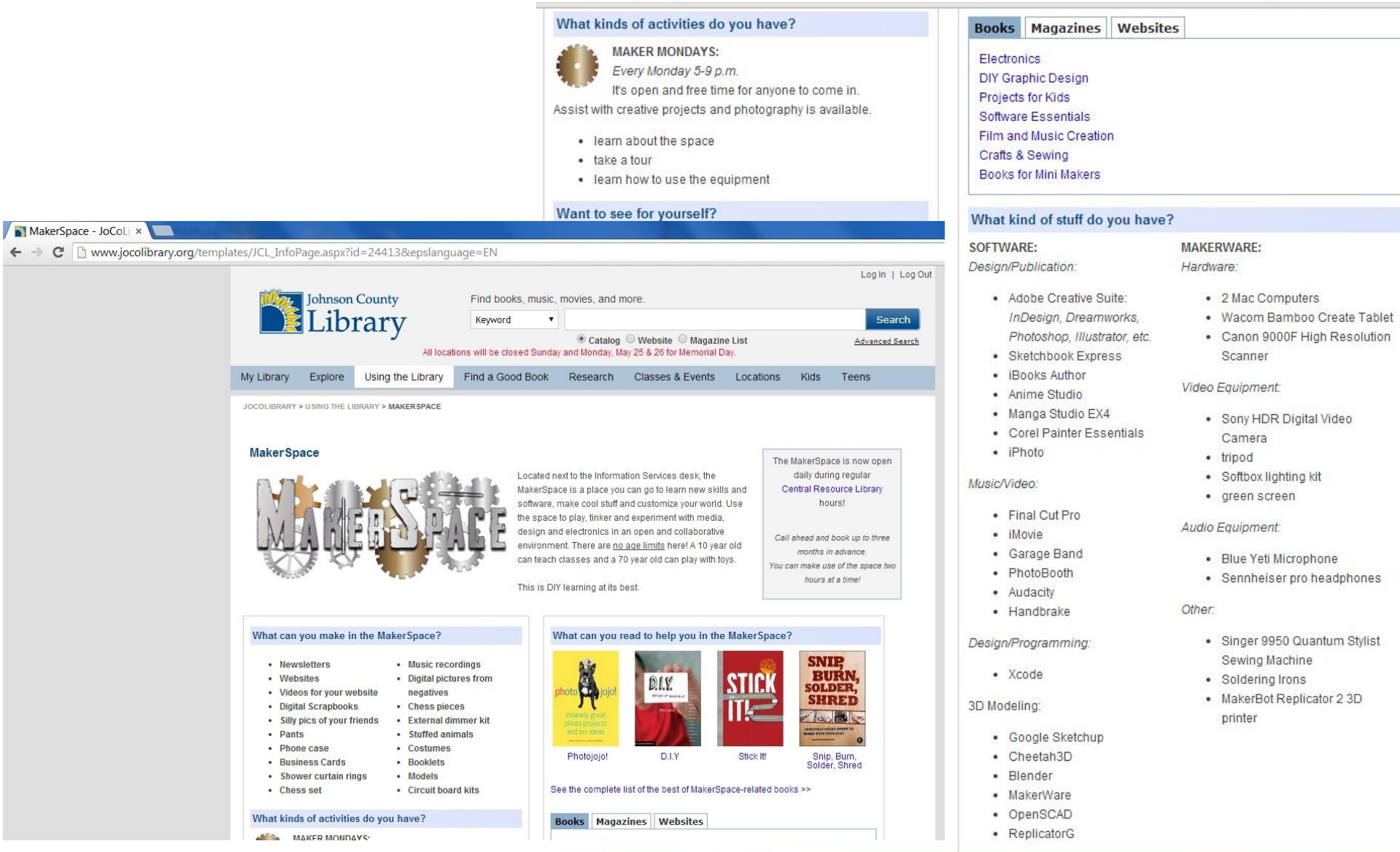
http://library-maker-culture.weebly.com/makerspaces-in-libraries.html

Examples of Libraries with MakerSpaces

- Public
  - Johnson County Library (Kansas)
  - Public Library of Cincinnati and Hamilton County (Ohio)
  - Missoula Public Library (Montana)
  - Denton Public Library (Texas)
- Academic
  - North Carolina State University - Hunt Library
  - University of Michigan - MLibrary
  - University of Nevada Reno - DeLaMare Library
  - Caldwell College (New Jersey) – Jennings Library

Johnson County Library MakerSpace (Public):

www.jocolibrary.org/templates/JCL_InfoPage.aspx?id=24413&epslanguage=EN



What kinds of activities do you have?

MAKER MONDAYS:
Every Monday 5-9 p.m.
It's open and free time for anyone to come in.
Assist with creative projects and photography is available.

- learn about the space
- take a tour
- learn how to use the equipment

Want to see for yourself?

Books | Magazines | Websites

Electronics
DIY Graphic Design
Projects for Kids
Software Essentials
Film and Music Creation
Crafts & Sewing
Books for Mini Makers

What kind of stuff do you have?

SOFTWARE:
Design/Publication:

- Adobe Creative Suite: *InDesign, Dreamworks, Photoshop, Illustrator, etc.*
- Sketchbook Express
- iBooks Author
- Anime Studio
- Manga Studio EX4
- Corel Painter Essentials
- iPhoto

Music/Video:

- Final Cut Pro
- iMovie
- Garage Band
- PhotoBooth
- Audacity
- Handbrake

Design/Programming:

- Xcode

3D Modeling:

- Google Sketchup
- Cheetah3D
- Blender
- MakerWare
- OpenSCAD
- ReplicatorG

MAKERWARE:
Hardware:

- 2 Mac Computers
- Wacom Bamboo Create Tablet
- Canon 9000F High Resolution Scanner

Video Equipment:

- Sony HDR Digital Video Camera
- tripod
- Softbox lighting kit
- green screen

Audio Equipment:

- Blue Yeti Microphone
- Sennheiser pro headphones

Other:

- Singer 9950 Quantum Stylist Sewing Machine
- Soldering Irons
- MakerBot Replicator 2 3D printer

MakerSpace - JoCoLi ×

www.jocolibrary.org/templates/JCL_InfoPage.aspx?id=24413&epslanguage=EN

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Johnson County Library

Find books, music, movies, and more.

Keyword ▾ Search

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All locations will be closed Sunday and Monday, May 25 & 26 for Memorial Day.

My Library | Explore | Using the Library | Find a Good Book | Research | Classes & Events | Locations | Kids | Teens

JOCOLIBRARY > USING THE LIBRARY > MAKERSPACE

MakerSpace

Located next to the Information Services desk, the MakerSpace is a place you can go to learn new skills and software, make cool stuff and customize your world. Use the space to play, tinker and experiment with media, design and electronics in an open and collaborative environment. There are no age limits here! A 10 year old can teach classes and a 70 year old can play with toys.

This is DIY learning at its best.

The MakerSpace is now open daily during regular Central Resource Library hours!

Call ahead and book up to three months in advance.
You can make use of the space two hours at a time!

What can you make in the MakerSpace?

- Newsletters
- Websites
- Videos for your website
- Digital Scrapbooks
- Silly pics of your friends
- Pants
- Phone case
- Business Cards
- Shower curtain rings
- Chess set
- Music recordings
- Digital pictures from negatives
- Chess pieces
- External dimmer kit
- Stuffed animals
- Costumes
- Booklets
- Models
- Circuit board kits

What can you read to help you in the MakerSpace?

Photojojo! | D.I.Y | Stick It! | Snip, Burn, Solder, Shred

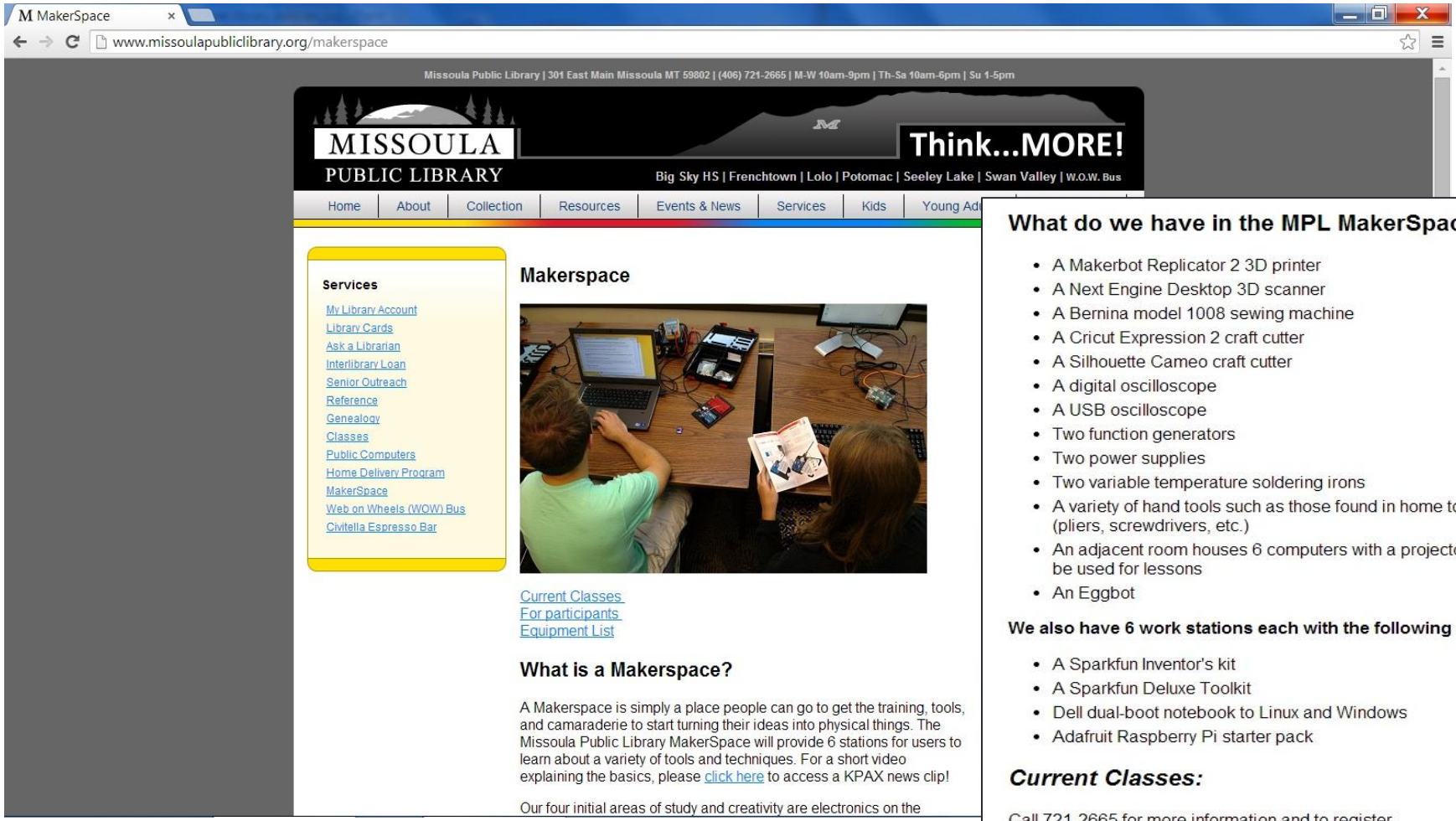
See the complete list of the best of MakerSpace-related books >>

Books | Magazines | Websites

What kinds of activities do you have?

MAKER MONDAYS:

MPL MakerSpace (Public): www.missoulapubliclibrary.org/makerspace



What do we have in the MPL MakerSpace?

- A Makerbot Replicator 2 3D printer
- A Next Engine Desktop 3D scanner
- A Bernina model 1008 sewing machine
- A Cricut Expression 2 craft cutter
- A Silhouette Cameo craft cutter
- A digital oscilloscope
- A USB oscilloscope
- Two function generators
- Two power supplies
- Two variable temperature soldering irons
- A variety of hand tools such as those found in home toolboxes (pliers, screwdrivers, etc.)
- An adjacent room houses 6 computers with a projector which can be used for lessons
- An Eggbot

We also have 6 work stations each with the following equipment:

- A Sparkfun Inventor's kit
- A Sparkfun Deluxe Toolkit
- Dell dual-boot notebook to Linux and Windows
- Adafruit Raspberry Pi starter pack

Current Classes:

Call 721-2665 for more information and to register.

Bicycle Maintenance and Repair

Ever wanted to learn how to change a flat and do some basic general maintenance on your bike? Simple bike repairs can be very easy when

North Carolina State University MakerSpace (Academic): www.lib.ncsu.edu/spaces/makerspace

Makerspace | NCSU

www.lib.ncsu.edu/spaces/makerspace

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Makerspace

Hunt, Room 4412

Summer Hours

Open 2 - 6PM Monday-Friday, May 19-August 1

Closed May 26, June 25, July 4

Available by appointment only May 7-18, August 2-19 (email us)

If you have questions or for more information, please email us at library_makerspace@ncsu.edu

What is the Makerspace?

The Hunt Library Makerspace supports students, faculty, and staff in learning about emerging technologies and bringing their creations to life. The space has two 3D printers and a laser cutter for rapid prototyping of designs. What will you make?

Access & Costs

Makerspace services are available to all current NCSU students, faculty, and staff. The service costs are:

- **uPrint 3D Printer:** $10 per cubic inch of material, with a $5 minimum
- **MakerBot 3D Printer:** $0.35 per gram of material, with a

Give us feedback

Creation Station (Academic):

http://www.caldwell.edu/news/caldwell-college-creation-station

The Caldwell College

www.caldwell.edu/library-news/caldwell-college-creation-station-opened-week-jennings-library

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Caldwell College, New Jersey » News » Caldwell College Creation Station

Caldwell College Creation Station

March 31, 2014 – The Caldwell College Creation Station opened in the Jennings Library last week. The Creation Station is part of "New Jersey Library Makerspaces – The Leading Edge," an initiative that combines equipment with community-driven innovation, to develop creative laboratories where New Jersey residents will be able to share resources and knowledge, collaborate on projects, network and build things. The New Jersey State Library and LibraryLinkNJ, the New Jersey Library Cooperative, subsidized 15 Makerspaces at libraries statewide. The Jennings Library at Caldwell College was one of two academic libraries awarded the funding—the other was the Rutgers University Libraries.

"The contemporary Makerspace movement is really about creating community spaces where people can learn by doing and engage in exploration and creativity using digital and analog technologies. Such spaces can both enrich and empower library users' lives," said Mary Chute, NJ State Librarian. "It's an extension of the library's mission – a place of lifelong learning and community engagement – be it public, academic, school, medical or other type of library."

The Caldwell College Creation Station is equipped with a Makerbot Replicator (5th Generation) 3-D printer, a Makerbot Digital Scanner and handheld Sense Scanners and will focus on educational uses of 3-D printing, including the needs of visually impaired and kinesthetic learners. "A primary goal of the Creation Station is to move 3-D printing from the latest fad to a transformative tool that increases student engagement and fosters authentic learning across educational sectors," said Dr. Nancy Becker, Executive Director of the Jennings Library.

Demonstrations, workshops and continuing education courses will be offered, allowing College faculty and area K-12 educators the opportunity to brainstorm, share ideas and create 3-D objects for their own classrooms. The first 3D Printing Workshop for K-12 teachers was held on Friday, April 4. Students participating in Summer College at Caldwell will produce a 3D printed object to support their STEM research projects.

Funding for this Makerspace Initiative is provided by the New Jersey State Library and by LibraryLinkNJ, The New Jersey Library Cooperative, whose services are funded by the New Jersey State Library, which is responsible for the coordination, promotion, and funding of the New Jersey Library

Caldwell College, New Jersey » Library News » The Caldwell College Creation Station opened this week in the Jennings Library

The Caldwell College Creation Station opened this week in the Jennings Library

Equipped with a Makerbot Replicator (5th Generation) 3-D printer, two Makerbot Digital Scanners and a handheld Sense scanner, the CS has generated excitement across campus. The Creation Station team is learning the logistics of 3-D printing and has been busy printing an array of sample objects, including chain links, boxes, human heart, cross-section of the heart, a fully functional wrench and busts of scanned staff members.

Do All MakerSpaces Have a 3D Printer?

- Answer: No
- Ask the better questions:
  - “Would the patrons we serve at the library benefit from a MakerSpace?”
  - “Would the patrons we serve at the library benefit from a 3D printer?”
  - “Do we have the space for a MakerSpace or a 3D Printer?”
- Survey your patrons: www.surveymonkey.com
- Organize a Focus Group

Questions about MakerSpaces?

Why Have 3D Printers in Libraries?

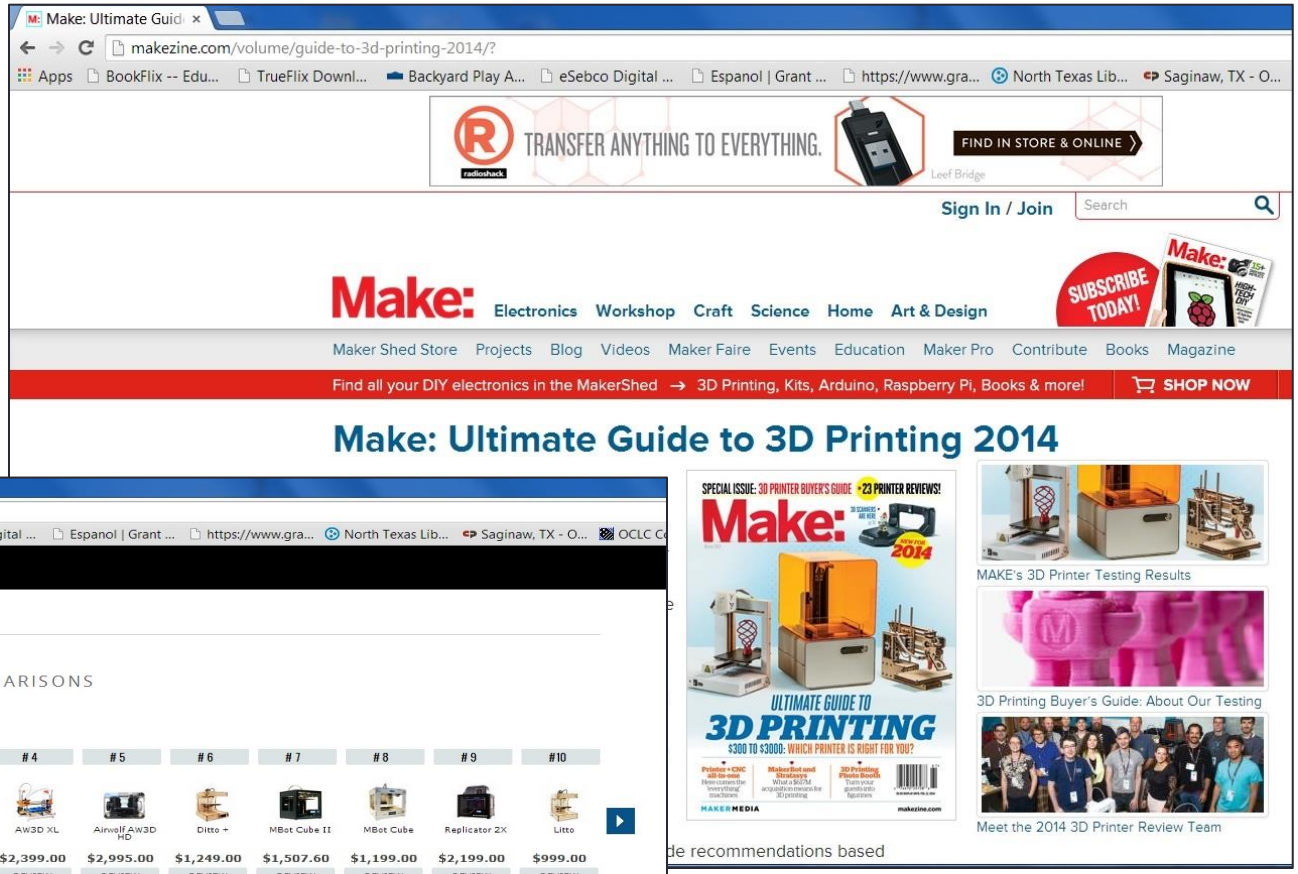
- Social Impact
- Education for Youth
- Intergenerational and Diverse Interests for All People
- Spread respect for intellectual property

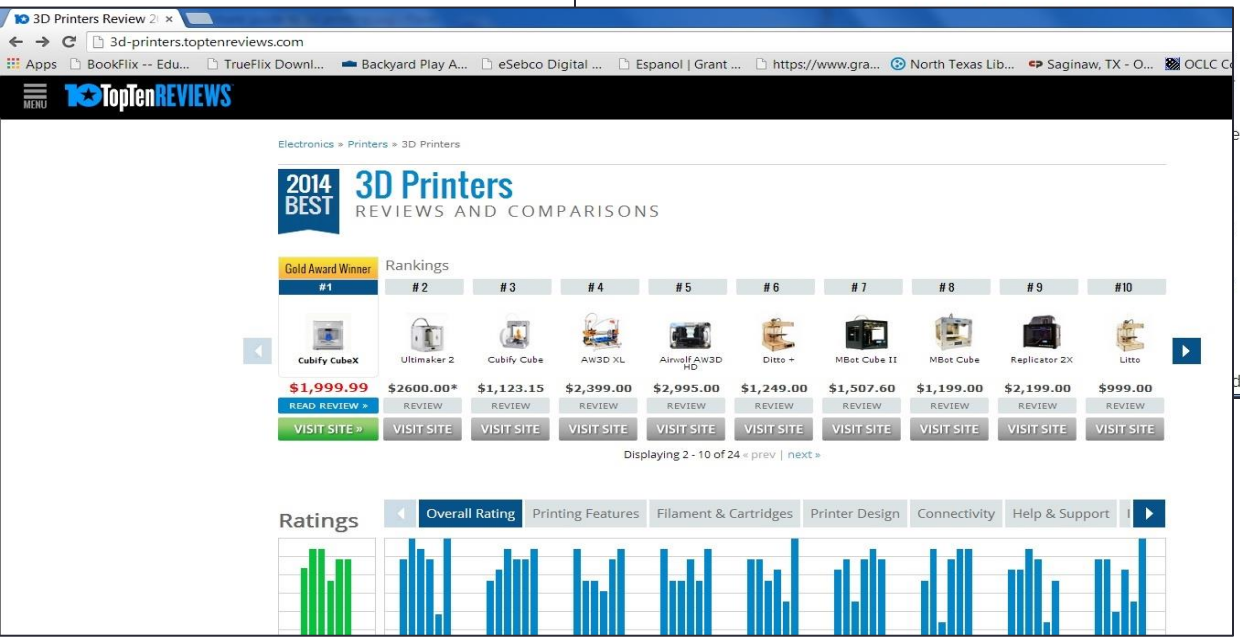
Selecting the Right 3D Printer(s)

- Target Audience (Community, Student, Faculty, Staff)
- Location (Mobile or Permanent)
- Quantity & Variety Needed
- Price
- Size
- Sound
- Print Speed
- Detail Quality
- DIY or Pre-built
- Software Compatibility
- Number of Extruders

Read Reviews:

http://makezine.com & http://3d-printers.toptenreviews.com



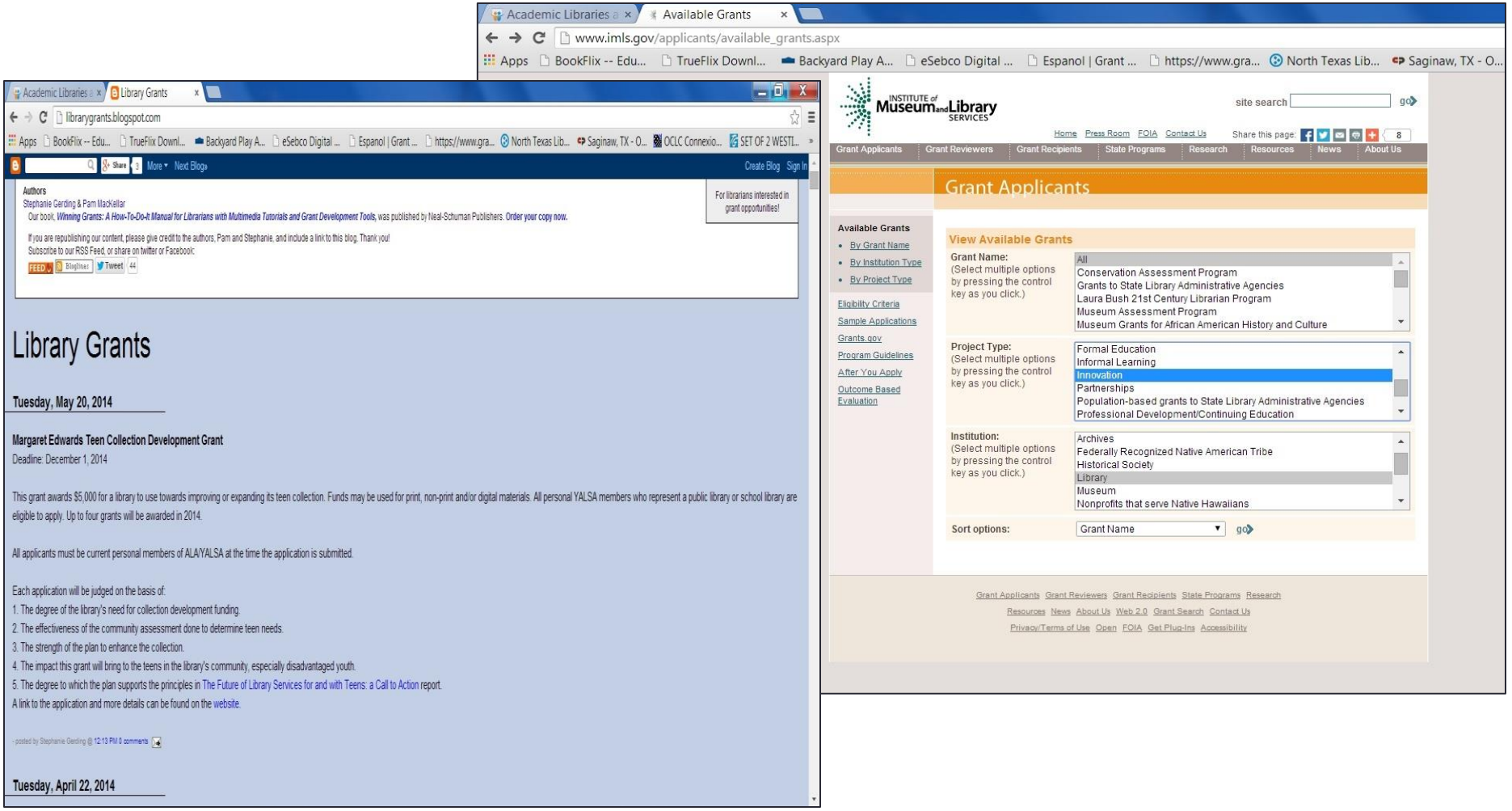


Funding Options for 3D Printers

- General Budget
- Donations
- Educator Discounts
  - Solidoodle & Stratasys
- Vendor Discounts
- Build Partnerships
- Grants
- Volunteers

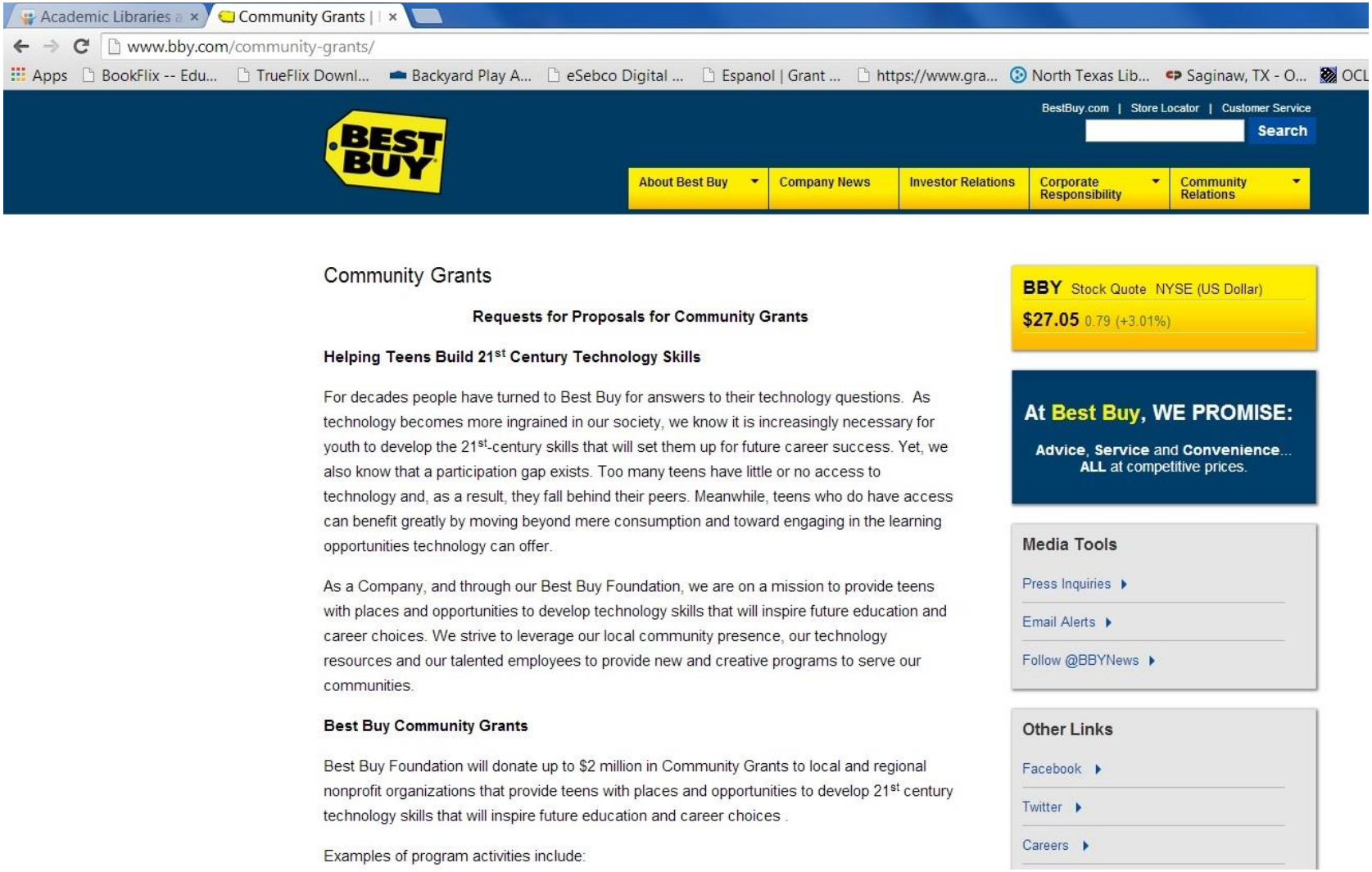
Library Grants:

http://librarygrants.blogspot.com & www.imls.gov/applicants/available_grants.aspx



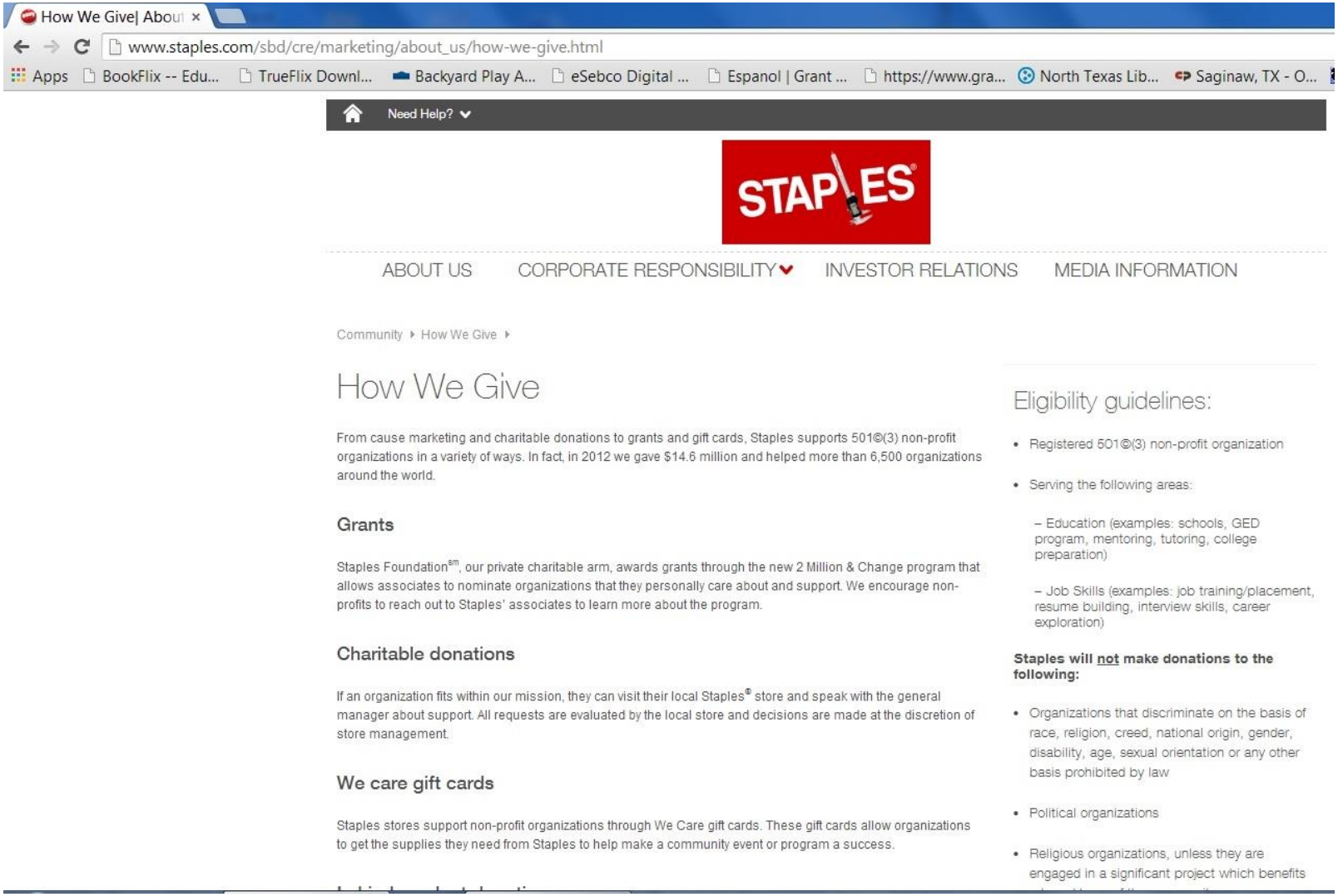
Best Buy Community Grant

www.bby.com/community-grants/

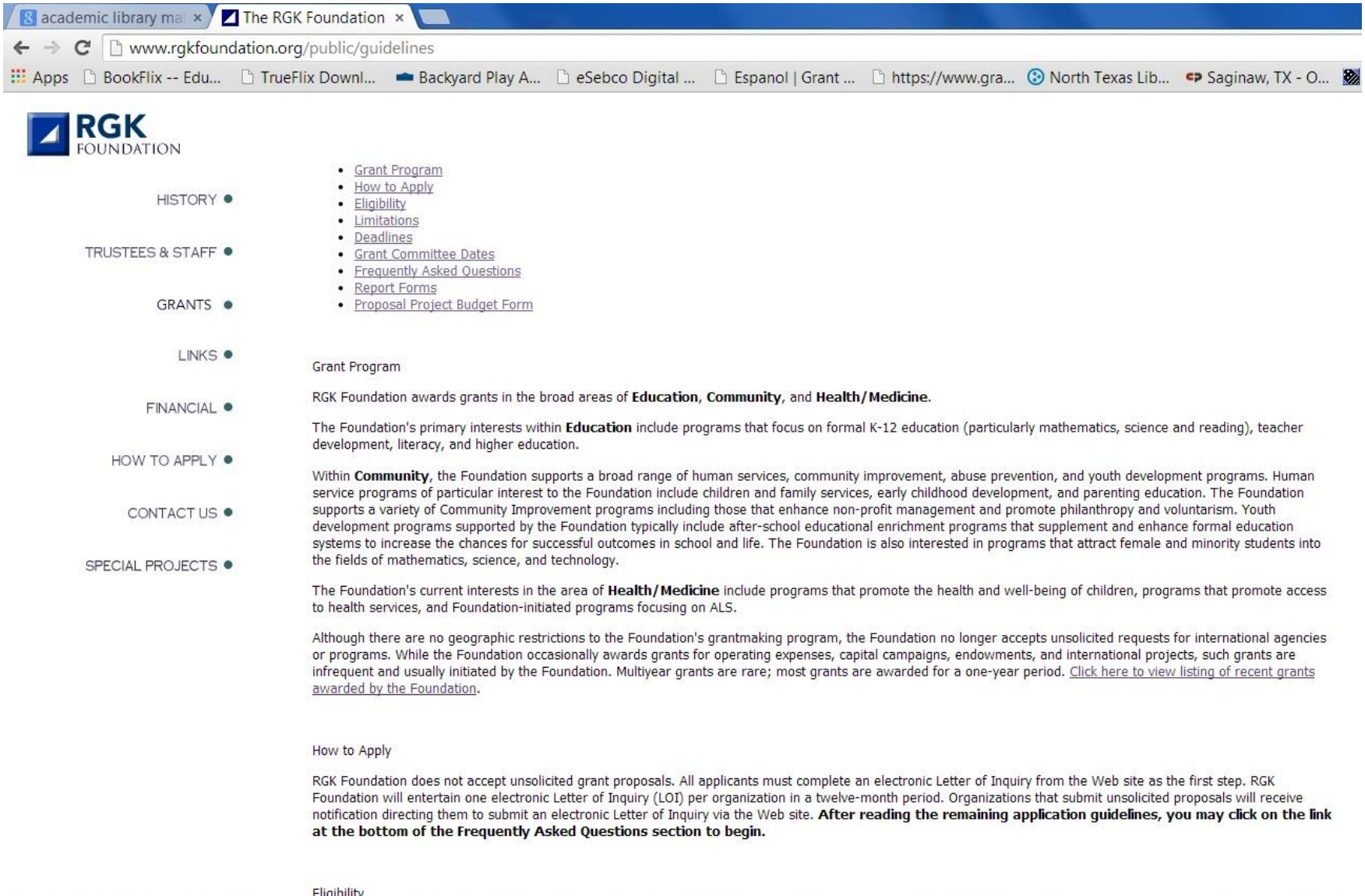


Staples Foundation:

www.staples.com/sbd/cre/marketing/about_us/how-we-give.html

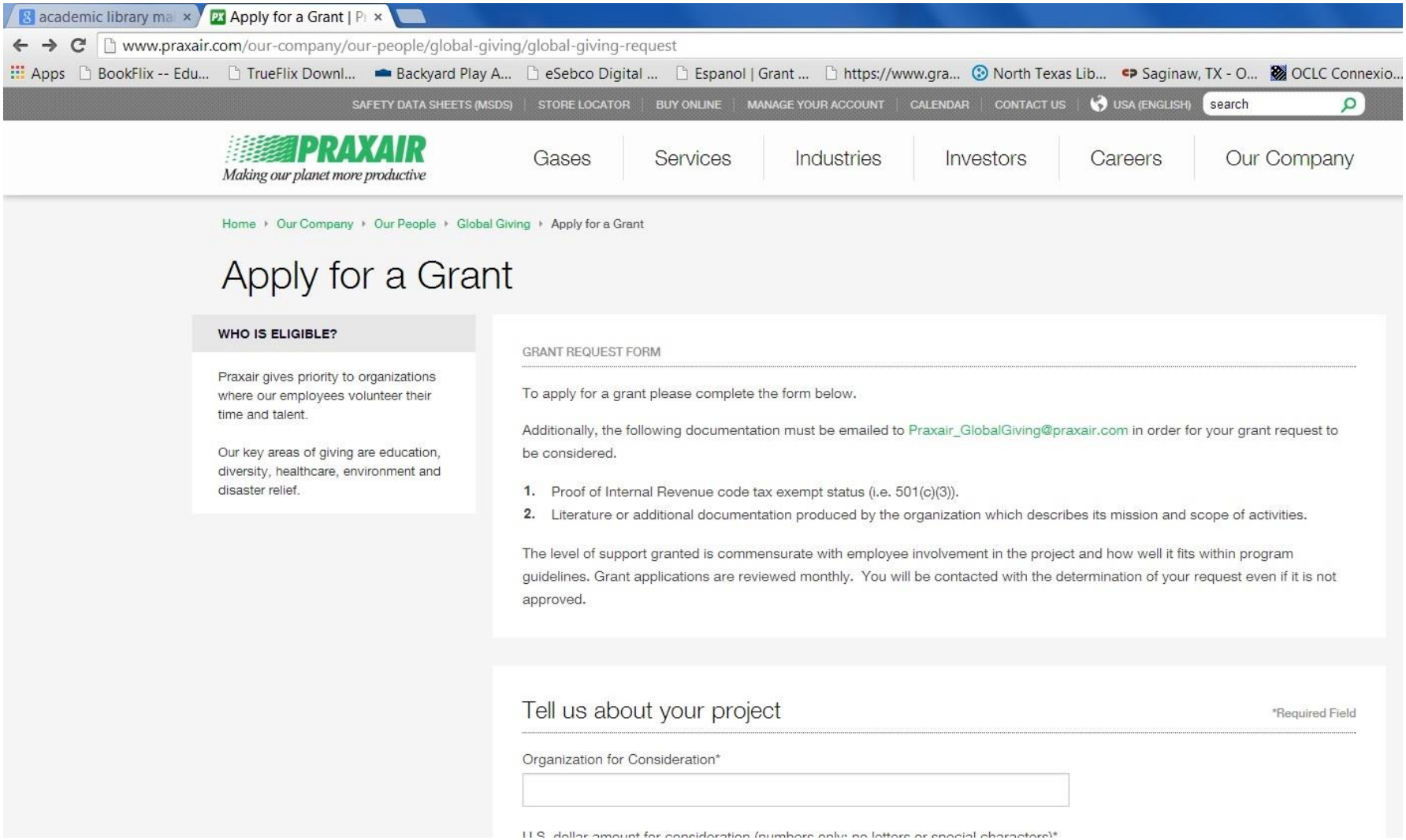


RGK Foundation: www.rgkfoundation.org



Praxair Foundation:

www.praxair.com/our-company/our-people/global-giving/global-giving-request



Sponsor an AmeriCorps Vista Project:

www.nationalservice.gov/programs/americorps/americorps-vista/sponso-vista-project

Coming soon to Missoula Public Library July 2014

Administrative Side of 3D Printing

- Personnel
  - Paid Personnel or Volunteers?
- Fees
  - Charge by time, filament, or ounces?
- Managing Liability
  - Print Copy or Electronic Forms
  - Certification for Use
- Policies
  - What objects are NOT allowed?
  - Age Limits
  - Print Time Restrictions
  - Will the patron need to be present during the printing?
  - Print Job or Print File Failure
  - Library's Right to Refuse Print Jobs
  - Disclosure Notice

Saginaw, TX 3D Printer Policy:

http://ci.saginaw.tx.us/DocumentCenter/View/2666

City of Saginaw
John Ed Keeter Public Library
3D Printer Policy

The City of Saginaw Public Library System (the "Library") maintains and furnishes a 3D Printer ("Equipment") for sole use by library patrons (individuals with library cards issued by the Library). The maintenance and furnishing of the Equipment is not intended to create a forum for library patrons to express themselves, to encourage a diversity of views from private speakers or to enable library patrons to express themselves or create a diversity of views.

The use of the Equipment shall be consistent with the purpose of the Library, which include:

- To serve as an information resource for library patrons;
- To increase access to information and services by library patrons;
- To make useful and practical information available to library patrons; and
- To facilitate research, learning and recreational pursuits by library patrons.

In accordance with these purposes, the Library has developed policy and procedures for use of the Equipment ("Policy"). By signing this Policy, a library patron agrees to abide by these policies and procedures when using the Equipment:

1. **Administration.** The Library Director or his or her designee is responsible for administering this Policy. No library patron shall have a right to use the Equipment by virtue of this Policy.
2. **Certain Uses Prohibited.** Regardless of viewpoint, certain uses of the Equipment are prohibited and violate this Policy:

   (a) Printing any object that is unlawful, threatening, abusive, tortuous, obscene, and racially, ethnically or otherwise objectionable;

   (b) Printing any object that is intended to physically harm, or attempt to harm, an animal or person in any way;

   (c) Printing any object that infringes upon a patent, trademark, trade secret, copyright or other proprietary rights of any party unless consent from the rights-owner has been obtained; The Copyright law of the United States governs the making of photocopies or other reproductions of copyrighted material. The Library reserves the right to deny a library patron's use of the Equipment if, in his or her judgment, use of the Equipment would violate Copyright law.

   (d) Printing any object or any part of an object that is regulated or requires a license to use or carry unless such person has the requisite license to use or carry the object printed.

3. **Usage Subject to Refusal or Revocation.** The Equipment is provided to further the purposes of the Library and not as a benefit to a library patron. In accordance with this Policy, including the stated purposes herein, the Library Director may refuse a library patron's request to use the Equipment at any time. Failure to abide by the Policy may result in revocation of the library patron's library use privileges.
4. **Agreement.** By signing this Policy, I indicate that I understand the terms of this Policy and agree to abide by this Policy when using the Equipment.

Printed Name*

Signature _____ Date _____

Parent or Legal Guardian's Printed Name*

Parent or Legal Guardian's Signature _____ Date _____

A parent or Legal Guardian's signature is required if a library patron is under 18 years of age.

Disclaimer: While the Library and the Library Director make every effort to oversee the use of the Equipment, usage of the Equipment is not under the direction or control of the Library, the Library Director or the City of Saginaw. Neither the Library nor the City is responsible for any object created with the use of the Equipment, including any harm or injury incurred as a result of any usage of the Equipment.

Lessons Learned & Great Experiences

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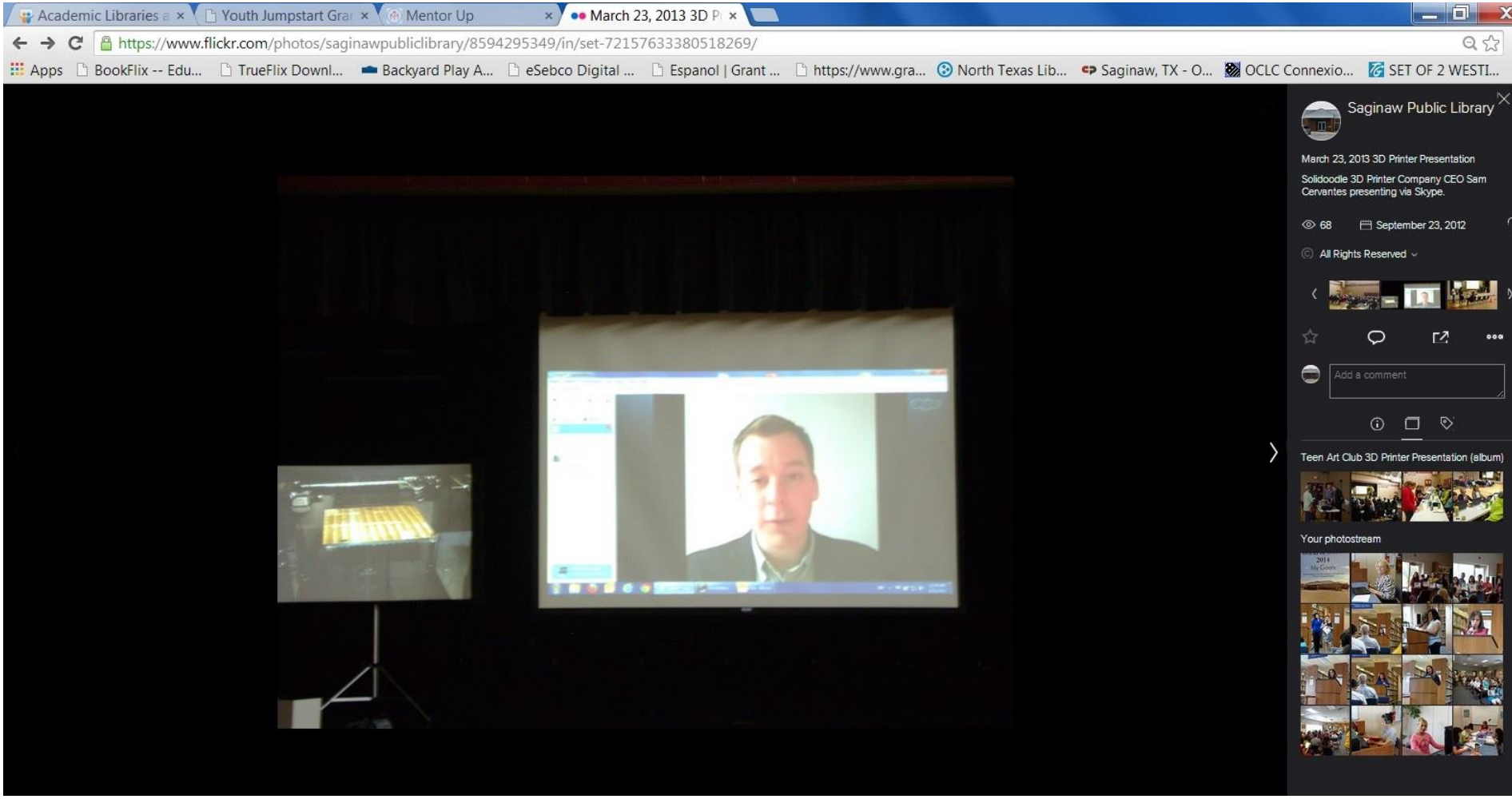

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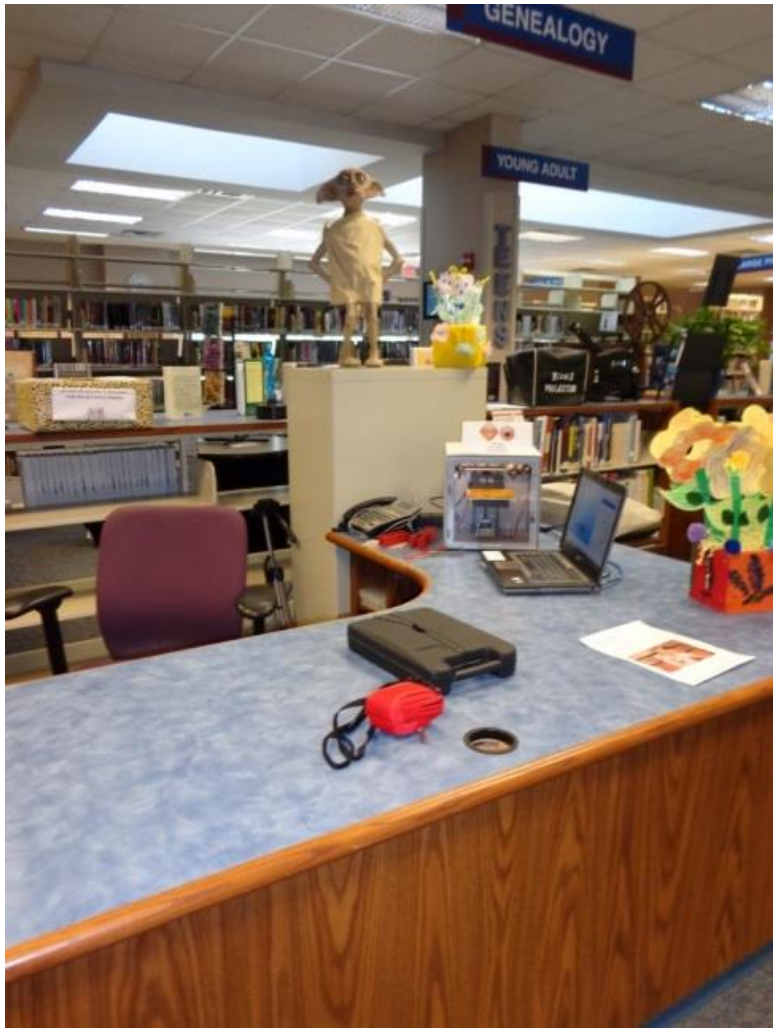

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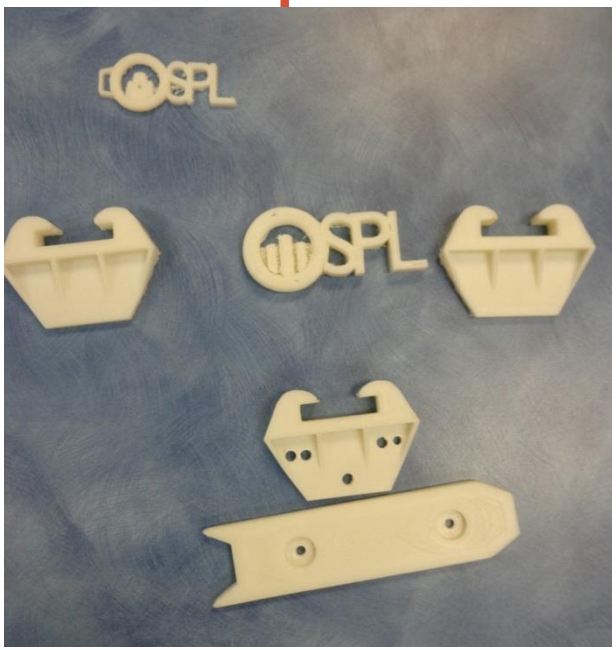

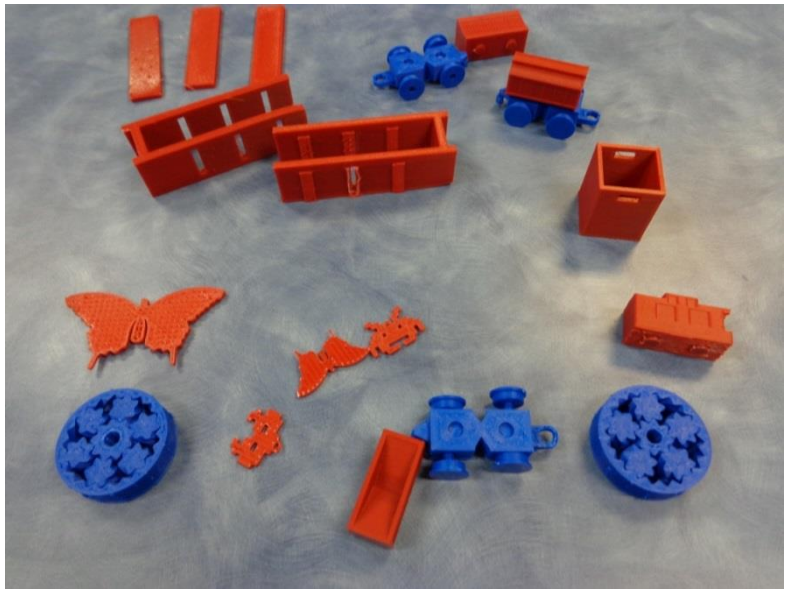

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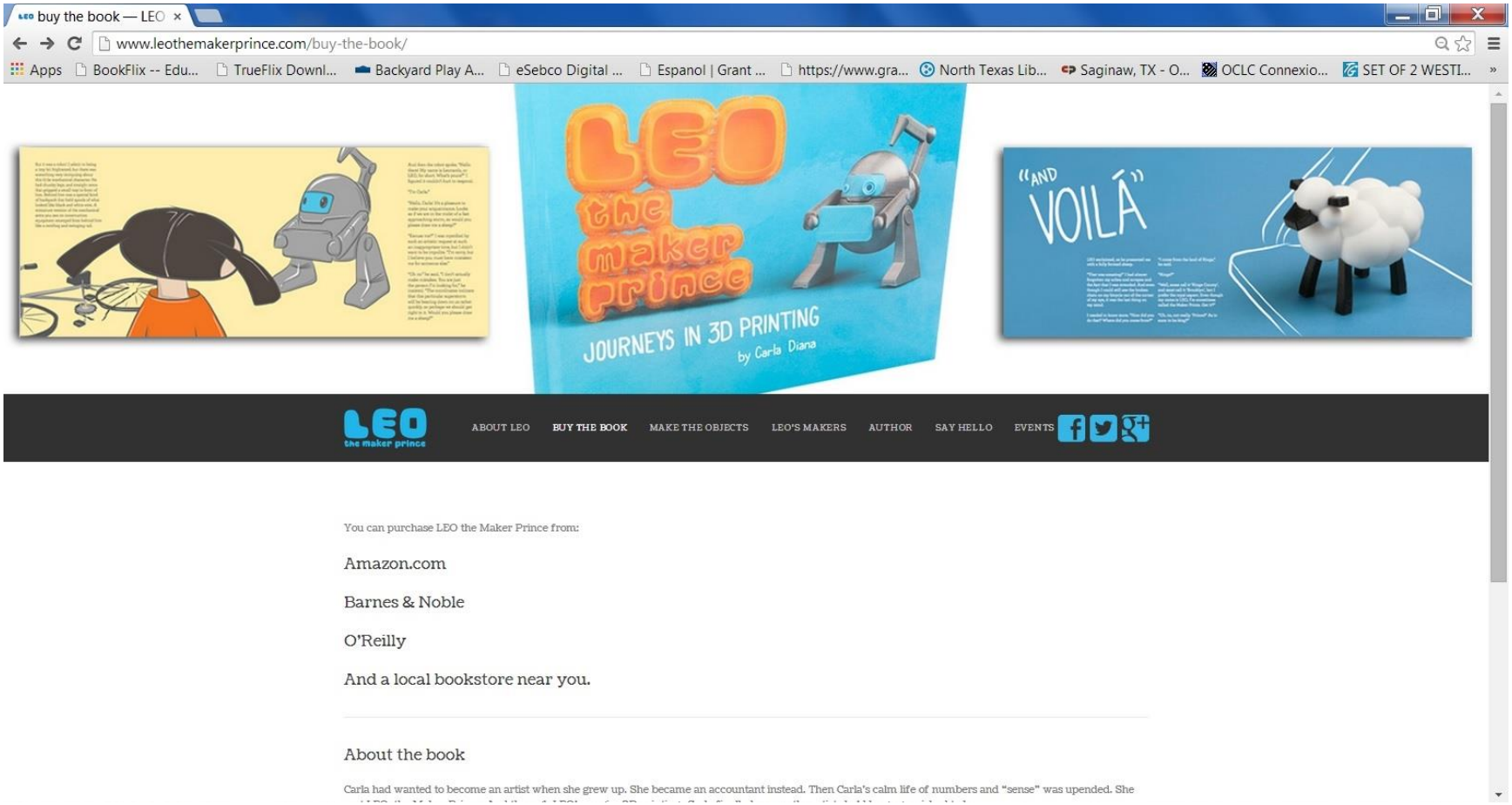
Photo includes Thor Bahnmiller (Left) and Jonathan Roosa (Right)

The End

Fun Further Reading for All Ages…

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